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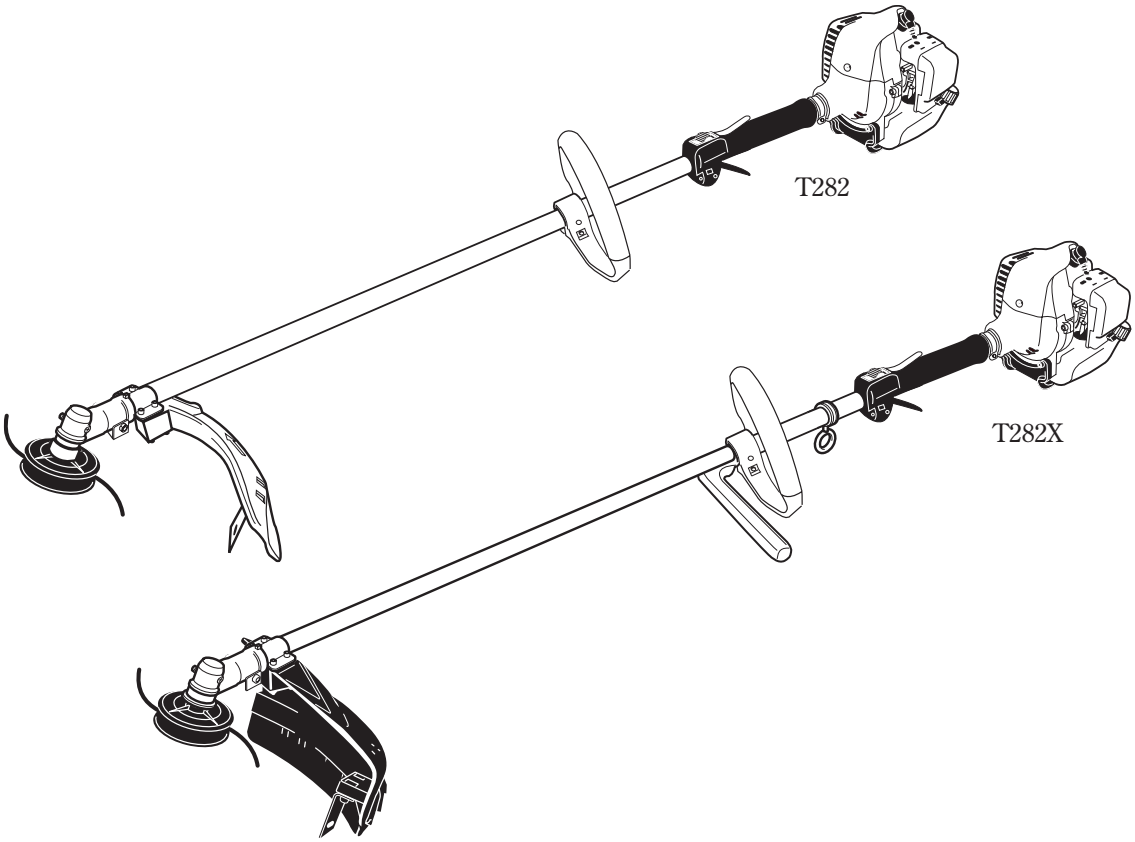
SHINDAIWA OWNER'S/OPERATOR'S MANUAL

T282 TRIMMER
T282X TRIMMER



WARNING!

Minimize the risk of injury to yourself and others! Read this manual and familiarize yourself with the contents. Always wear eye and hearing protection when operating this unit.

shindaiwa®

Part Number 89027 Rev. 11/08

Introduction

The Shindaiwa 282 series is designed and built to deliver superior performance and reliability without compromise to quality, comfort, safety or durability.

Shindaiwa engines represent the leading edge of high-performance engine technology, delivering exceptionally high power with remarkably low displacement and weight. As an owner/operator, you'll soon discover for yourself why Shindaiwa is simply in a class by itself!

IMPORTANT!

The information contained in these instructions describes units available at the time of publication.

Shindaiwa Inc. reserves the right to make changes to products without prior notice, and without obligation to make alterations to units previously manufactured.

WARNING!

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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IMPORTANT!

The operational procedures described in this manual are intended to help you get the most from this unit as well as to protect you and others from harm. These procedures are guidelines for safe operation under most conditions, and are not intended to replace any safety rules and/or laws that may be in force in your area. If you have questions regarding your 282 Series, or if you do not understand something in this manual, contact your local authorized Shindaiwa dealer. You may also contact Shindaiwa Inc. at the address printed on the back of this Manual.

Attention Statements

Throughout this manual are special "attention statements".

DANGER!

A statement preceded by the triangular attention symbol and the word "DANGER" contains information that should be acted upon to prevent serious injury or death.

WARNING!

A statement preceded by the triangular attention symbol and the word "WARNING" contains information that should be acted upon to prevent serious bodily injury.

IMPORTANT!

A statement preceded by the word "IMPORTANT" is one that possesses special significance.

CAUTION!

A statement preceded by the word "CAUTION" contains information that should be acted upon to prevent mechanical damage.

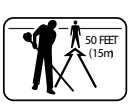
NOTE:

A statement preceded by the word "NOTE" contains information that is handy to know and may make your job easier.

Warning and Operational Labels

Read and follow this operator's manual. Failure to do so could result in serious injury..

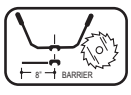
Wear eye and hearing protection at all times during operation of this unit. Wear head protection where there is a risk of falling objects.



Make sure no one is within 15 M / 50 feet of an operating machine.

Beware of thrown or richocheted objects

DO NOT use this unit with a blade!



DO NOT operate this unit with a blade unless the unit is equipped with a Shindawia-approved handlebar or barrier.

Always wear a harness when operating this unit with a blade. A harness is also recommended when using trimmer line.

If unit is used as a brushcutter, beware of blade thrust. A jammed blade can cause the unit to jerk suddenly and may cause the operator to lose control of the unit.

Muffler, muffler cover and surrounding area will be high in temperature.There is risk of getting burned.

Safety

Work Safely

Trimmers and brushcutters operate at very high speeds and can do serious damage or injury if they are misused or abused. *Never allow a person without training or instruction to operate this unit!*

WARNING!

Never make unauthorized attachment installations.

Stay Alert

You must be physically and mentally fit to operate this unit safely.

WARNING!

Never operate power equipment of any kind if you are tired or if you are under the influence of alcohol, drugs, medication or any other substance that could affect your ability or judgement.

WARNING!
Use Good Judgment

ALWAYS inspect unit before each use. Replace any damaged parts.

NEVER run the engine when transporting the unit.

NEVER run the engine indoors! Make sure there is always good ventilation. Fumes from engine exhaust can cause serious injury or death.

ALWAYS stop the unit immediately if it suddenly begins to vibrate or shake.

Inspect for broken, missing or improperly installed parts or attachments.

NEVER extend trimming line beyond the length specified for your unit.

ALWAYS keep the unit as clean as practical. Keep it free of loose vegetation, mud, etc.

ALWAYS hold the unit firmly with both hands when cutting or trimming, and maintain control at all times.

ALWAYS use the proper cutting tool for the job.

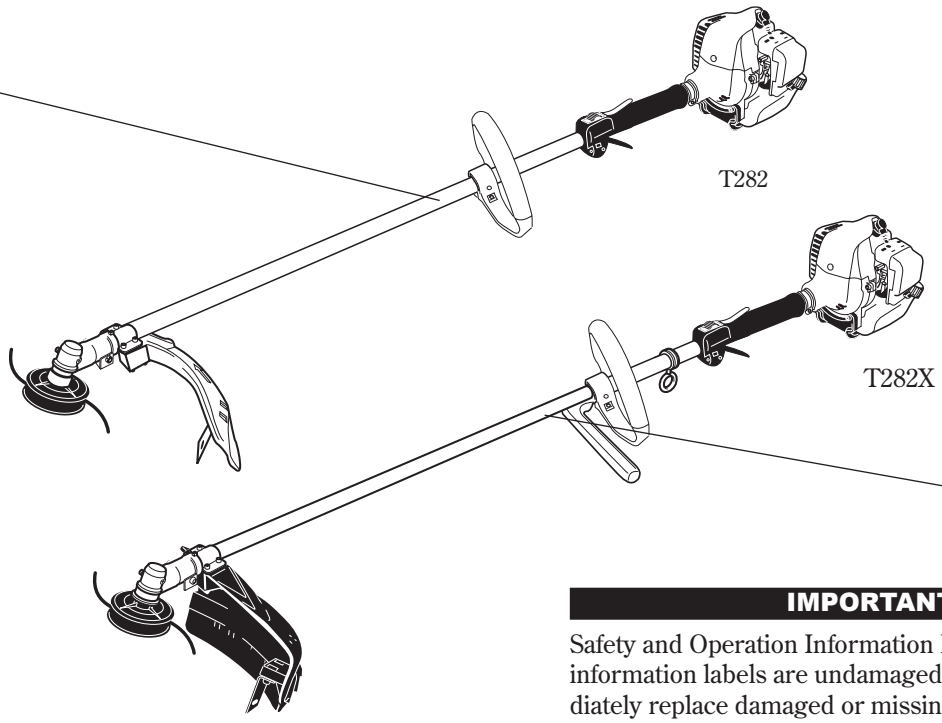
ALWAYS keep the handles clean.

ALWAYS disconnect the spark plug wire before performing any maintenance work.

ALWAYS, if a saw blade should bind fast in a cut, shut off the engine immediately. Push the branch or tree to ease the bind and free the blade.

Safety Labels

READ THE OPERATOR'S MANUAL
WEAR HEARING AND ANSI Z87.1 APPROVED EYE PROTECTION
50 FEET (15m)
KEEP BYSTANDERS AWAY AT LEAST 50 FEET (15m)
BEWARE OF THROWN OR RICOCHETED OBJECTS
DO NOT OPERATE THIS MACHINE WITH A BLADE



READ THE OPERATOR'S MANUAL
WEAR HEARING AND ANSI Z87.1 APPROVED EYE PROTECTION
50 FEET (15m)
KEEP BYSTANDERS AWAY AT LEAST 50 FEET (15m)
BEWARE OF THROWN OR RICOCHETED OBJECTS
USE HANDLEBAR OR BARRIER WHEN OPERATING WITH A BLADE
WEAR HARNESS WHEN OPERATING WITH A BLADE
BEWARE OF BLADE THRUST

IMPORTANT!

Safety and Operation Information Labels: Make sure all information labels are undamaged and readable. Immediately replace damaged or missing information labels. New labels are available from your local authorized Shindaiwa dealer.

Safety (continued)

The Properly Equipped Operator

Wear hearing protection devices and a broad-brimmed hat or helmet. A helmet is required when using a blade-equipped brushcutter to clear small trees.

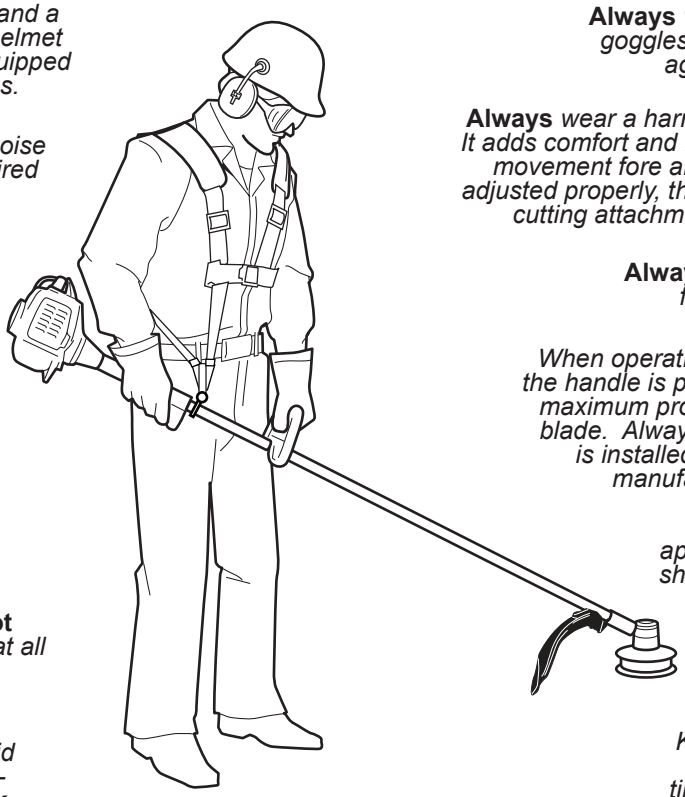
Prolonged exposure to excessive noise is fatiguing and could lead to impaired hearing.

Wear close-fitting clothing to protect legs and arms. Gloves offer added protection and are strongly recommended. Do not wear clothing or jewelry that could get caught in machinery or underbrush. Secure long hair so that it is above shoulder level. NEVER wear shorts!

Long-term exposure to vibration can damage your hands.

Keep a proper footing and **do not overreach**. *Maintain your balance at all times during operation.*

Wear appropriate footwear (non-skid boots or shoes): do not wear open-toed shoes or sandals. **Never work barefooted!**



Always *wear eye protection such as goggles or safety glasses to shield against thrown objects.*

Always *wear a harness when operating the unit . It adds comfort and helps ensure safety by limiting movement fore and aft. When the harness is adjusted properly, the unit should balance with the cutting attachment parallel to the ground.*

Always *operate with both hands firmly gripping the unit.*

When operating with a blade, make sure the handle is positioned to provide you with maximum protection from contacting the blade. Always make sure the handlebar is installed in accordance with the manufacturers instructions.

Always *make sure the appropriate cutting attachment shield is correctly installed and in good condition. Do not operate the unit if the cutting attachment shield is missing, loose, or broken.*

Keep away from the rotating trimmer line or blade at all times, and never lift a moving attachment above waist-high.

Be Aware of the Working Environment

Avoid long-term operation in very hot or very cold weather.

Make sure bystanders or observers outside the 15 meter (50 feet) "danger zone" wear eye protection.

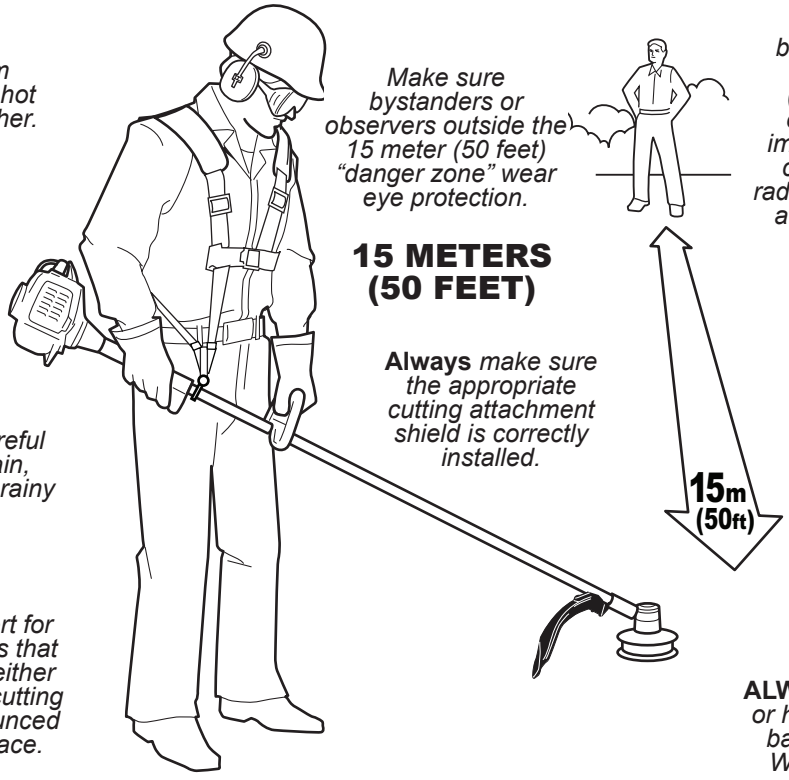
15 METERS (50 FEET)

Always *make sure the appropriate cutting attachment shield is correctly installed.*

Be extremely careful of slippery terrain, especially during rainy weather.

Be constantly alert for objects and debris that could be thrown either from the rotating cutting attachment or bounced from a hard surface.

If contact is made with a hard object, stop the engine and inspect the cutting attachment for damage.



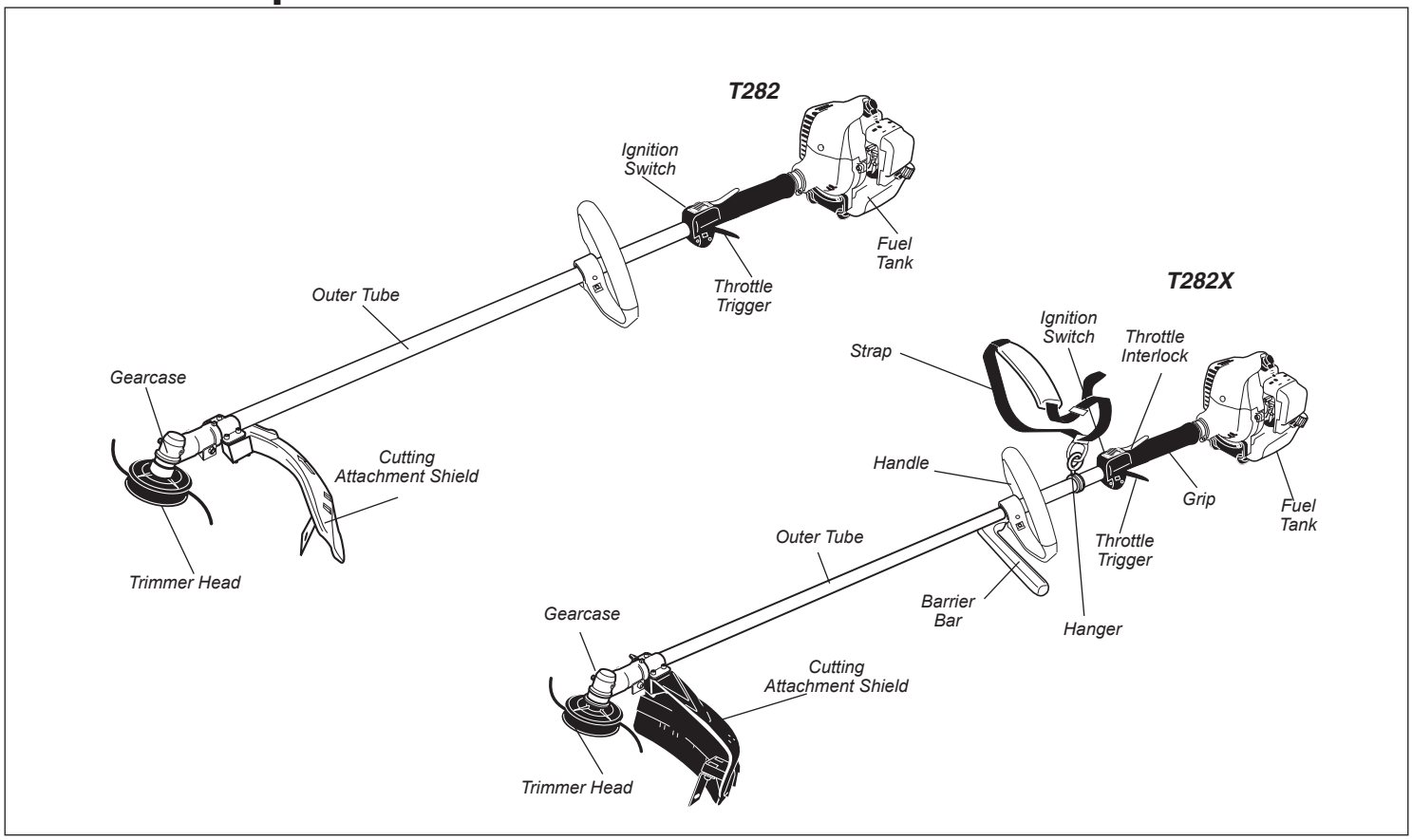
Reduce the risk of bystanders being struck by flying debris. Make sure no one is within 15 meters (50 feet)— that's about 16 paces of an operating attachment. Stop immediately if a child, pet, or person comes within a 15 meter (50 feet) radius. Outside this radius, there is still a risk of injury from thrown objects.

Do not operate the unit if the cutting attachment shield is missing, loose, or broken.

Beware of a coasting blade when brushcutting or edging. A coasting blade can injure while it continues to spin after the throttle trigger is released or after the engine is stopped.

ALWAYS *clear your work area of trash or hidden debris that could be thrown back at you or toward a bystander. When operating in rocky terrain or near electric wires or fences, use extreme caution to avoid contacting such items with the cutting attachment.*

Product Description



Using the illustration as a guide, familiarize yourself with your machine and its various components. Understanding your machine helps ensure top performance, long service life and safer operation.

WARNING!

Do not make unauthorized modifications or alterations to any of these units or their components.

IMPORTANT!

The terms “left”, “left-hand”, and “LH”; “right”, “right-hand”, and “RH”; “front” and “rear” refer to directions as viewed by the operator during normal operation.

Specifications

Engine Name	T282	T282X
Engine Model	S282EV	
Engine Type	2-cycle, catalyst	
Dry Weight (Without guard and strap)	5.7 kg/12.6 lb.	6.0 kg/13.2 lb
Dimensions	1785 x 315 x 345 mm/70.3 x 12.4 x 13.6 in.	1790 x 375 x 330 mm/70.5 x 14.8 x 13 in.
Bore x Stroke	1.38 x 1.18 in./ 35 x 30 mm	
Displacement	28.9 cc/1.7 cu. in.	
Maximum Power Output	1.4 HP (1.0 kW) @ 8000 (min^{-1})	
Fuel/Oil Ratio	50:1 with ISO-L-EGD or JASO FD class 2-cycle mixing oil*	
Fuel Tank Capacity	750 ml/25.4 oz..	
Carburetor Type	Walbro, WYK, diaphragm-type	
Ignition	One-piece electronic, transistor-controlled	
Spark Plug	BPMR6A	
Air Cleaner Type	Non-reversible foam filter element	
Starting Method	Recoil	
Stopping Method	Slide switch	
Transmission Type	Automatic, centrifugal clutch w/bevel gear	
EPA Emission Compliance Period*	Category A	

*Specifications are subject to change without notice.

*The EPA emission compliance period referred to on the emission compliance label located on the engine, indicates the number of operating hours for which the engine has been shown to meet Federal emission requirements. Category C = 50 hours (Moderate), B = 125 hours (Intermediate) and A = 300 hours (Extended)

Assembly

This unit comes fully assembled with the exception of the cutting attachment shield and cutting attachment.

Prior to Assembly

Before assembling, make sure you have all the components required for a complete unit and inspect unit and components for any damage.

- Engine and shaft assembly
- Cutting attachment shield
- Cutting attachment
- Kit containing cutting attachment shield, mounting bracket and hardware, this owner's/operator's manual and tool kit for routine maintenance. Tool kits vary by model and may include a spark plug/screwdriver combination wrench, and a scraper.

Handle and barrier bar X unit

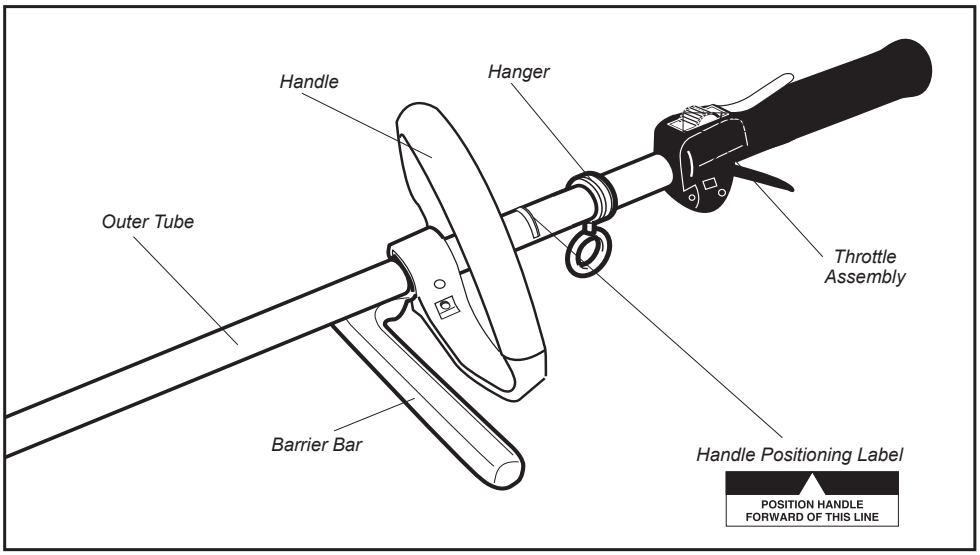
The handle is attached at the factory and positioned vertically.

1. Loosen socket headed capscrew at the base of handle and rotate the handle 90 degrees.

NOTE:

Keep handle forward of handle positioning label!

2. Position the handle forward of the Handle Positioning Label at the best position for operator comfort (usually about 254 mm (10 inches) ahead of throttle housing).
3. Tighten the socket headed capscrew securely.



Assembly (continued)
Cutting Attachment Shield

1. Insert the cutting attachment shield between the outer tube and the cutting attachment mounting plate.

NOTE:

It may be necessary to loosen the retaining nut and clamp screw to adjust cutting attachment shield mounting plate.

2. Fit the two shims and the bracket over the outer tube and loosely install the four socket-head screws.
3. Tighten the four socket-head cap screws to secure the cutting attachment shield.

CAUTION!

Make sure the clamp screw and retaining nut are securely tightened before tightening the four socket-head cap screws.

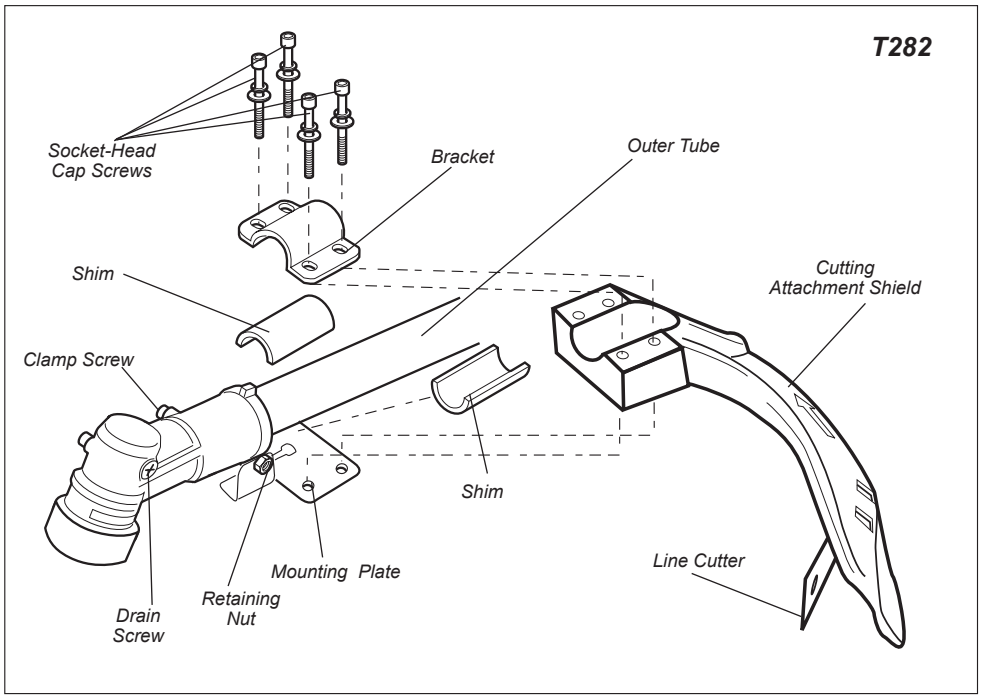
4. Attach the subshield to the cutting attachment shield by snapping the hooks into the hook receivers..

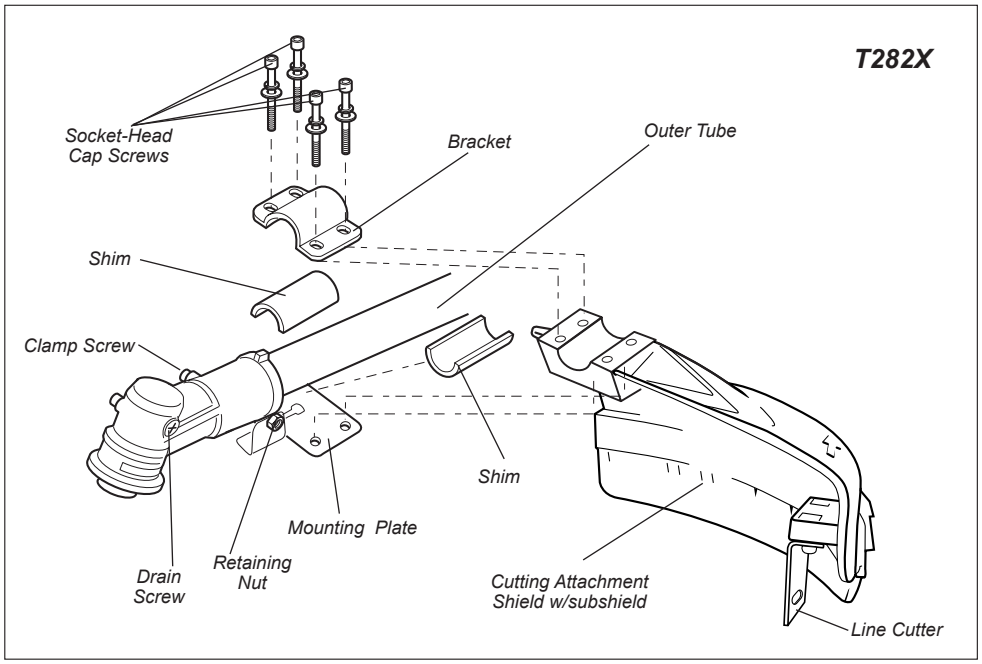
CAUTION!

Make sure the subshield is completely hooked at the hook receiver.

WARNING!

NEVER operate the unit without the cutting attachment shield installed and tightly secured!



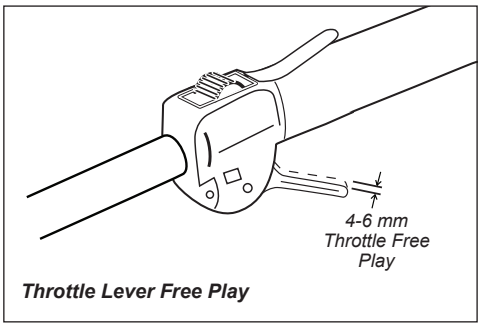


Assembly (continued)

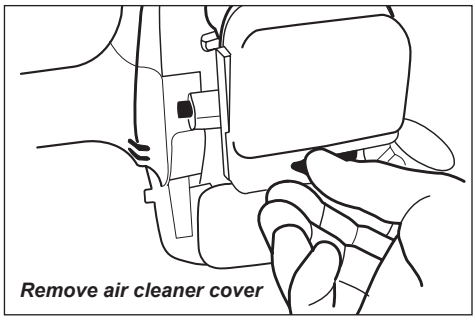
Adjust Throttle Lever Free Play

The throttle lever free play should be approximately 4-6 mm. Make sure that the throttle lever operates smoothly without binding. If it becomes necessary to adjust the lever free play, follow the procedures and illustrations that follow.

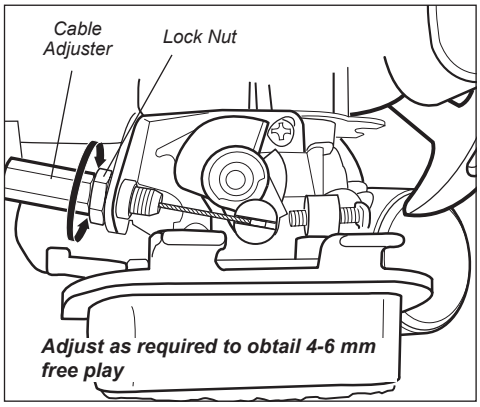
1. Loosen the air cleaner cover knob and remove the air cleaner cover.
2. Loosen the lock nut on the cable adjuster.
3. Turn the cable adjuster in or out as required to obtain proper free play.
4. Tighten the locknut.
5. Reinstall the air cleaner cover.



Throttle Lever Free Play

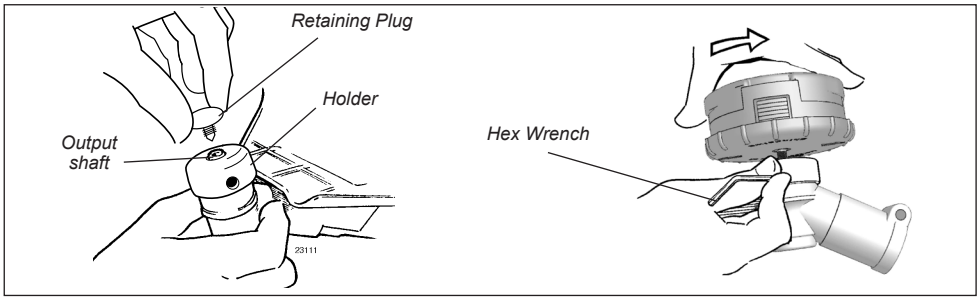


Remove air cleaner cover

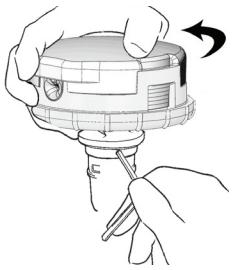


Adjust as required to obtail 4-6 mm free play

Install trimmer head T282



To install a trimmer head onto a T282X, first remove the shaft bolt, bolt guard (see the next page).



1. Turn the trimmer over so that the gear case output shaft faces UP.
2. Remove and discard the black plastic protective cap from the output shaft.
3. Rotate the holder until the hole in the holder aligns with the notch on the gear case. Use the long end of the hex wrench to lock the holder and output shaft.
4. While holding the hex wrench, thread the trimmer head onto the output shaft, turning counter-clockwise. Using hand pressure only, tighten the trimmer head firmly on the output shaft.

IMPORTANT!

The trimmer head has a left-hand thread. For removal turn the trimmer head clockwise.

5. Remove the hex wrench.
6. Adjust the trimmer line length to reach no further than the line cutter on the cutting attachment shield. Trim to the correct length if necessary.

The unit should now be completely assembled and ready for use with a trimmer head.

WARNING!

A standard grass trimmer with a loop handle should NEVER be operated with blade-type attachments. For blade use the trimmer must be fitted with a bicycle-type handlebar or a barrier bar that is located in front of the operator to reduce the risk of the operator from coming in contact with the cutting attachment (per ANSI B175.3). When using a blade, the unit must also be equipped with a harness or strap.

Assembly (continued)
Installing Brushcutter Blade T282X

1. Turn the unit upside down so the gear case output shaft is facing UP and remove the shaft bolt, bolt guard and holder B from the gear case shaft.
2. Align the hole in blade holder A with the matching hole in the gear case flange and then temporarily lock the output shaft by inserting a hex wrench through both holes.
3. Fit the blade over the flange on holder A.
4. Install blade holder B on the output shaft.

CAUTION!

Install the blade so its printed surface is visible to the operator when the brushcutter is in the normal operating position.

WARNING!

The blade must fit flat against the holder flange. The blade mounting hole must be centered over the raised boss on blade Holder A.

WARNING!

Holder B must fit flush against the blade and the splines engaged to the output shaft.

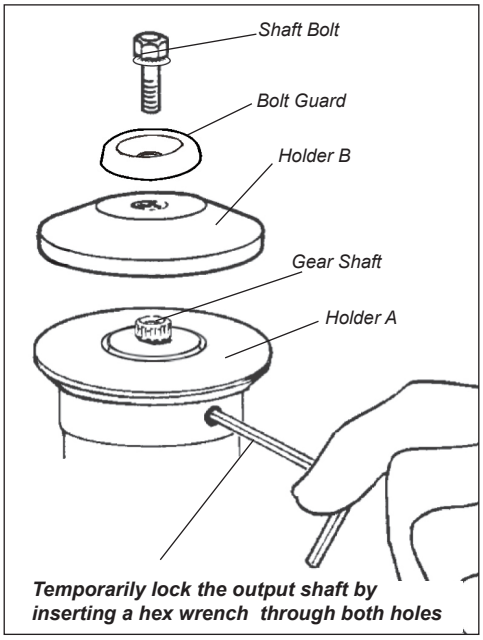
5. Install the bolt guard and then the blade retaining bolt. Using the combination spark plug wrench/screwdriver, tighten the bolt firmly in a counter-clockwise direction.
6. Remove the hex wrench.

IMPORTANT!

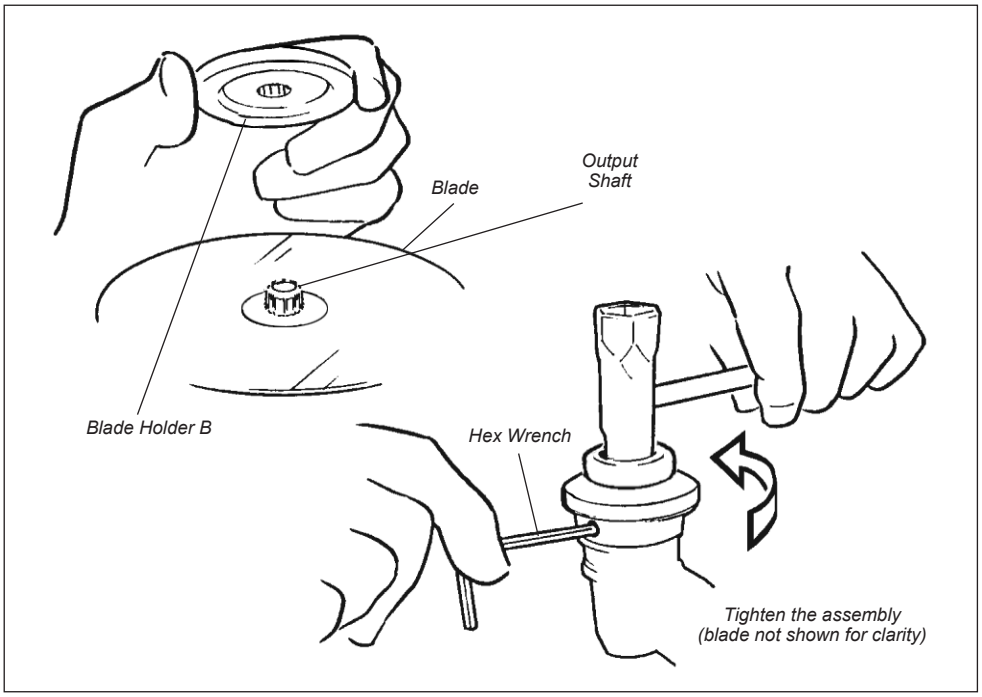
Discard blades that are bent, warped, cracked, broken or damaged in any way. Use a sharp blade. A dull blade is more likely to snag and thrust.

WARNING!

Do not attach any blade to a unit without proper installation of all required parts. Failure to use the proper parts can cause the blade to fly off and seriously injure the operator and/or bystanders.



Temporarily lock the output shaft by inserting a hex wrench through both holes



The unit should now be completely assembled and ready for use with a blade.

Mixing fuel

CAUTION!

- Never use any type of gasoline containing more than 10% alcohol by volume! Some types of gasoline contain alcohol as an oxygenate. Oxygenated gasoline may cause increased operating temperatures. Under certain conditions, alcohol-based gasoline may also reduce the lubricating qualities of some 2-cycle mixing oils.
- Generic oils and some outboard oils may not be intended for use in high-performance 2-cycle engines, and should never be used in your Shindaiwa engine.

CAUTION!

This engine is designed to operate on a 50:1 mixture consisting of unleaded gasoline and ISO-L-EGD or JASO FD class 2-cycle mixing oil only. Use of non-approved mixing oils can lead to excessive carbon deposits.

- Use only fresh, clean unleaded gasoline with a pump octane of 87 or higher.
- Mix all fuel with a 2-cycle air-cooled mixing oil that meets or exceeds ISO-L-EGD and/or JASO FD classified oils at 50:1 gasoline/oil ratio.

CAUTION!

Mix and pour fuel outdoors where there are no sparks and flames.

Examples of 50:1 mixing quantities

Gasoline liters	2-cycle mixing oil milliliters
2.5 - 1	50 ml
5 - 1	100 ml
10 - 1	200 ml
20 - 1	400 ml

IMPORTANT!

Mix only enough fuel for your immediate needs! If fuel must be stored longer than 30 days and shindaiwa ONE oil with fuel stabilizer is not used, it should first be treated with a fuel stabilizer such as STA-BIL™.

shindaiwa ONE Oil is a registered JASO FD classi-fied oil and also meets or exceeds ISO-L-EGD performance requirements. Shindaiwa One is recommended for use in all Shindaiwa low emissions engines. Shindaiwa One also includes a fuel stabilizer.

Filling the fuel tank

WARNING!
Minimize the Risk of Fire

- **NEVER** smoke or light fires near the engine.
- **ALWAYS** stop the engine and allow it to cool before refueling.
- **ALWAYS** Wipe all spilled fuel and move at least 3 meters (10 feet) from the fueling point and source before starting.
- **NEVER** place flammable material close to the engine muffler.
- **NEVER** operate the engine without the muffler and spark arrester screen in place and in good working condition.
- **FUEL IS HIGHLY FLAMMABLE.**
- **ALWAYS** store gasoline in a container approved for flammable liquids.
- **ALWAYS** inspect the unit for fuel leaks before each use. During each refill, check that no fuel leaks from around the fuel cap and/or fuel tank. If fuel leaks are evident, stop using the unit immediately. Fuel leaks must be repaired before using the unit.
- **ALWAYS** move the unit at least 3 meters (10 feet) away from a fuel storage area or other readily flammable materials before starting the engine.

1. Place the unit on a flat, level surface.
2. Clear any dirt or other debris from around the fuel filler cap.

CAUTION!

Slowly remove the fuel cap only after stopping the engine

3. Remove the fuel cap, and fill the tank with clean, fresh fuel.
4. Reinstall the fuel filler cap and tighten firmly.
5. Wipe away any spilled fuel before starting engine.

Starting the Engine

IMPORTANT!

Engine ignition is controlled by a two position switch mounted on the throttle housing labeled, “I” for ON or START and “O” for OFF or STOP.

WARNING!

Never start the engine from the operating position.

1. Slide the ignition switch to the “I” position.
2. Press the primer bulb until fuel can be seen flowing in the transparent return tube.
3. Set the choke lever to the CLOSED position if engine is cold.
4. While holding the outer tube firmly with left hand. Use your other hand to slowly pull the recoil starter handle until resistance is felt, then pull quickly to start the engine.

IMPORTANT!

The primer system only pushes fuel through the carburetor. Repeatedly pressing the primer bulb will not flood the engine with fuel.

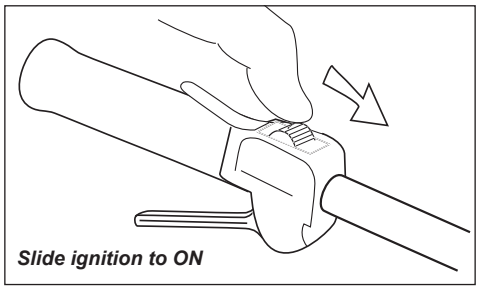
5. When the engine starts, slowly move the choke lever to the “OPEN” position. If the engine stops after the initial start, close the choke and restart.

CAUTION!

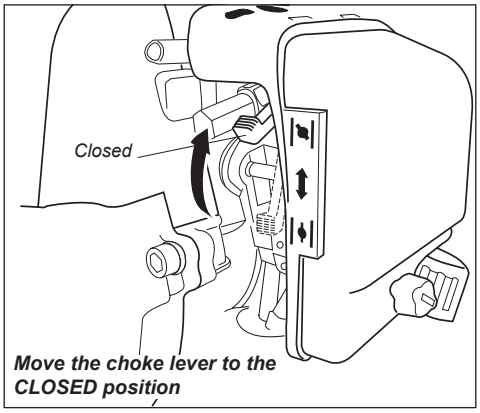
Do not pull the recoil starter to the end of the rope travel. Pulling the recoil starter to the end of the rope travel can damage the starter.

WARNING!

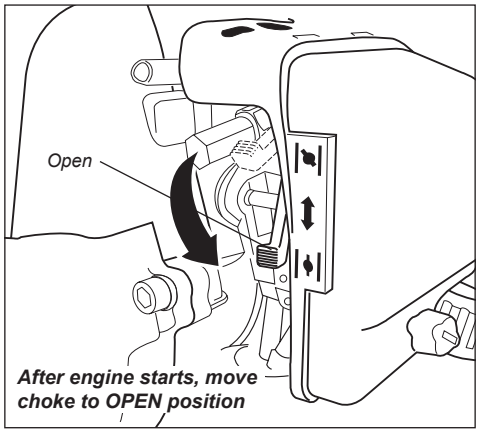
The cutting attachment may rotate when the engine is started!



Slide ignition to ON



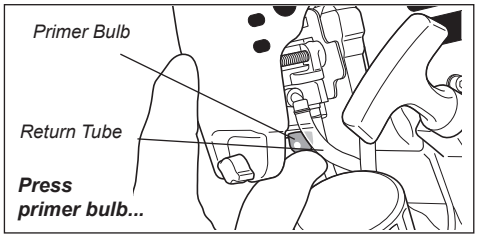
Move the choke lever to the CLOSED position



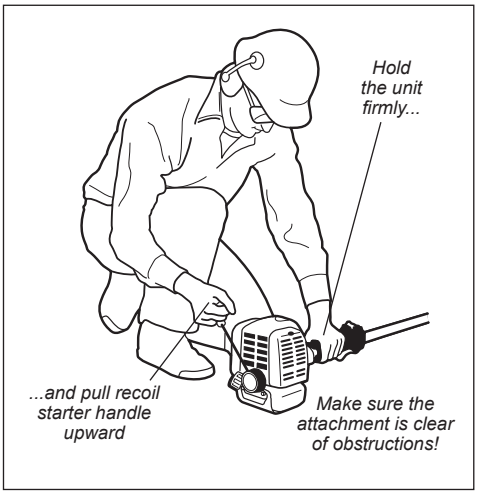
After engine starts, move choke to OPEN position

WARNING!

Keep all parts of your body away from the rotating cutting attachment and hot surfaces.



Press primer bulb...



IMPORTANT!

If the engine fails to start after several attempts with the choke in the closed position, the engine may be flooded with fuel. If flooding is suspected, move the choke lever to the open position and repeatedly pull the recoil starter to remove excess fuel and start the engine. If the engine still fails to start, refer to the troubleshooting section of this manual.

When the engine starts

- After the engine starts, allow the engine to warm up at idle for 2 or 3 minutes before operating the machine.
- After the engine is warm, pick up the unit and clip on the strap or harness. See the section on "Using the Strap".
- Advancing the throttle makes the cutting attachment rotate faster; releasing the throttle makes the attachment stop running. If the cutting attachment continues to rotate refer to “Engine Idle Adjustment” for engine idle adjustment procedures.

Starting a warm engine

Starting a warm engine involves all of the steps of starting a cold engine, EXCEPT:

- Do not press the primer bulb.
- The choke should be in the OPEN position.

If the engine does not start, follow the cold engine starting procedure.

Starting the Engine (continued)

Starting a flooded engine

1. Slide the ignition switch button to the STOP position.
2. Disconnect the spark plug wire, and remove the spark plug.
3. If the spark plug electrodes and ceramic insulator are fouled or soaked with fuel, clean or replace the plug. For spark plug specifications and gapping procedure, refer to the "Maintenance" section.
4. Open the choke.
5. Hold the throttle control lever depressed and crank the engine several times to clear excess fuel from the combustion chamber.
6. Reinstall the spark plug and tighten it firmly. If a torque wrench is available, torque the spark plug to 17–19 N·m (150- 168 lb.-in.).
7. Repeat the warm engine starting procedure.
8. If the engine fails to start, consult the troubleshooting guide provided.

CAUTION!

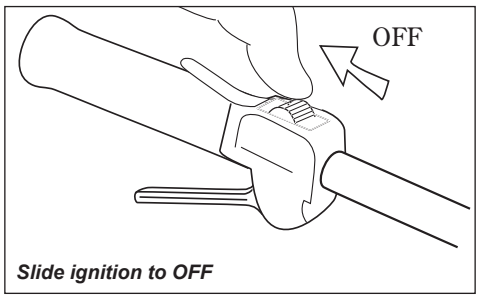
Incorrect spark plug installation may cause serious engine damage!

Stopping the Engine

Idle the engine briefly before stopping (about 2 minutes), then slide the ignition switch to the "O" (Engine OFF) position.

CAUTION!

A coasting blade can cause injury while it continues to spin after the engine is stopped or throttle trigger is released. Maintain proper control until the blade has completely stopped rotating.



Slide ignition to OFF

IMPORTANT

When the unit is turned off make sure the cutting attachment has stopped before the unit is set down.

Adjusting Engine Idle

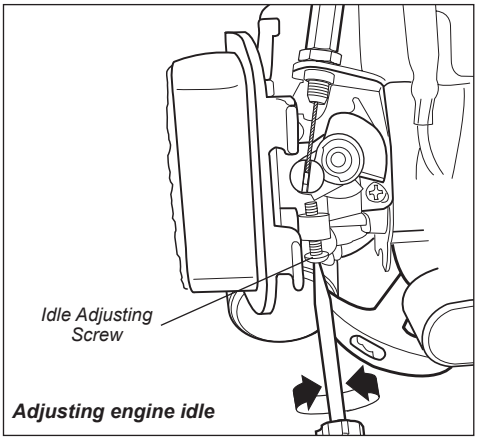
The engine must return to idle speed whenever the throttle lever is released. Idle speed is adjustable, and must be set low enough to permit the engine clutch to disengage the cutting attachment.

Idle Speed Adjustment

WARNING!

The cutting attachment must NEVER rotate at engine idle! If the idle speed cannot be adjusted by the procedure described here, return the trimmer to your Shindaiwa dealer for inspection.

1. Place the trimmer on the ground, then start the engine, and then allow it to idle 2-3 minutes until warm.
2. If the attachment rotates when the engine is at idle, reduce the idle speed by turning the idle adjustment screw counter-clockwise.
3. If a tachometer is available, the engine idle speed should be final adjusted to 2,750 (±250) min^{-1} (rpm).
4. Carburetor fuel mixture adjustments are preset at factory and cannot be serviced in the field.



Adjusting engine idle

Checking Unit Condition

NEVER operate the unit with the cutting attachment shield or other protective devices removed!

Use only authorized Shindaiwa parts and accessories with your Shindaiwa trimmer. Do not make modifications to this unit without written approval from Shindaiwa, Inc.

ALWAYS make sure the cutting attachment is properly installed and firmly tightened before operation.

NEVER use a cracked or warped cutting attachment: replace it with a serviceable one.

The cutting attachment may be spinning during carburetor adjustments. Wear your protective equipment and observe all safety instructions.

ALWAYS make sure the cutting attachment fits properly into the appropriate attachment holder. If a properly installed attachment vibrates, replace the attachment with new one and re-check.

ALWAYS stop the engine immediately and check for damage if you strike a foreign object or if the unit becomes tangled. Do not operate with broken or damaged equipment.

WARNING!

A cutting attachment shield or other protective device is no guarantee of protection against ricochet. YOU MUST ALWAYS GUARD AGAINST FLYING DEBRIS!

NEVER allow the engine to run at high RPM without a load. Doing so could damage the engine.

NEVER operate a unit with worn or damaged fasteners or attachment holders.

When transporting, make sure the engine is not running and the blade is covered with the blade cover.

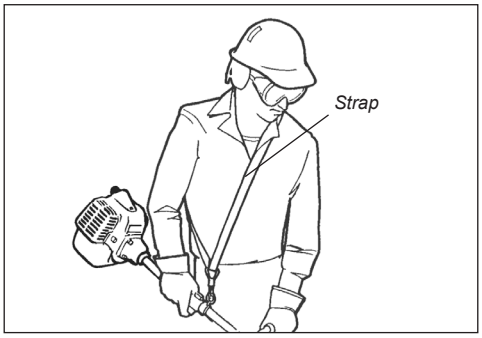
Operation

Shoulder Strap T282X

WARNING!

Always wear a shoulder strap when operating this unit with a blade. Wearing a shoulder strap with a grass trimmer can increase operator comfort during extended periods of operation.

1. Hook the strap hook to the hanger on the outer tube.
2. Wear the shoulder strap so that the hook stays at your right hand side.
3. Adjust the length of the shoulder strap so that you can hold and operate the machine comfortably.



IMPORTANT

Adjust the shoulder strap so the shoulder pad rests comfortably on the off-side shoulder and the cutting path of the cutting attachment is parallel to the ground. Make sure all hooks and adjustment devices are secure.

NOTE:

Using a shoulder strap when operating this unit with a blade allows you to maintain proper control of the unit and reduces fatigue during extended operation.

Cutting grass with a trimmer head

Your Shindaiwa unit may be equipped with one of several Shindaiwa trimmer head models, each with features for specific applications and/or operational requirements.

NOTE:

For proper operation, always refer to the instructions accompanying the trimmer head being used.

Trimmer head styles:

Semi-automatic. Trimmer line is indexed when the operator taps the trimmer head on the ground during operation.

Manual. The operator indexes line manually with the grass trimmer stopped.

Fixed. The operator must stop the unit and add new lengths of trimmer line manually.

Flail. This device, designed for clearing weeds and light brush, features three nylon blades attached to the head by pivots.

NOTE:

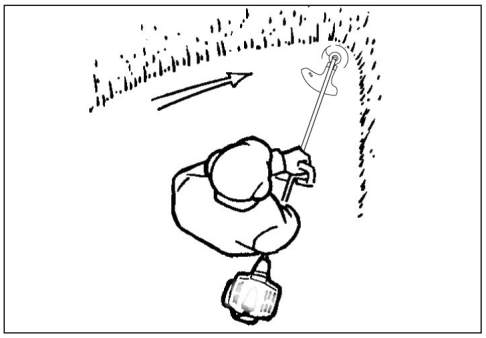
Additional hardware may be required to mount the Fixed Line or the Flail type trimmer heads.

Engine Operating Speeds

Operate at full throttle while cutting grass.

Trimming and Mowing Grass

Hold the grass trimmer so the trimmer head is angled slightly into the area to be cut. To ensure maximum trimmer-line service life, cut only with the tip of the trimmer line. Cut grass by swinging the unit's trimmer head from left to right. Keep the trimmer head horizontal.



CAUTION!

Use only flexible, nonmetallic line recommended by the manufacturer. Never use, for example, wire or wire-rope, which can break off and become a dangerous projectile.

CAUTION!

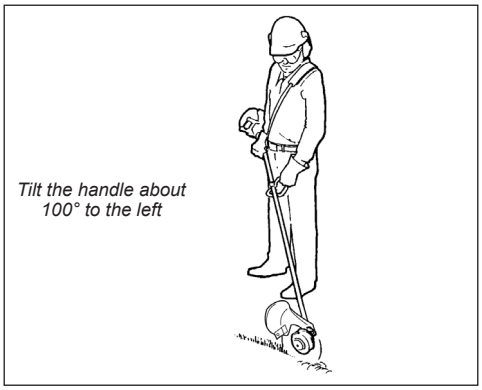
- Do not push the rotating line into trees, wire fences or any material that could tangle or break line ends.
- Operation of trimmer without a cutting attachment shield and using excessive line length can lead to premature clutch failure.
- Operation at low rpm can lead to premature clutch failure.

WARNING!

Remove all objects such as rocks, broken glass, nails, wire, or string, which can be thrown or become entangled in the cutting attachment.

Edging

Tilt the handle about 100° to the left (from horizontal) and move forward, holding the trimmer or brushcutter vertically as shown.



WARNING!

- Before working with a blade-equipped unit, always inspect and clean the area of objects that could interfere with or damage the blade.
- Never use a blade near sidewalks, fence posts, buildings or other objects that could cause injury or damage.
- Never use a blade for purposes other than those for which it was designed.
- Whenever you strike a hard object with a blade, always stop the brushcutter and carefully inspect the blade for damage. NEVER OPERATE THE BRUSHCUTTER WITH A DAMAGED BLADE!
- A blade-equipped unit must be equipped with a bicycle-type handlebar or barrier bar as well as a harness or shoulder strap.
- Always make sure the cutting attachment shield is properly installed before operating this unit.

Blade Thrust

"Blade thrust" is a sudden sideways or backward motion of the brushcutter. Such motion may occur when the blade jams or catches on an object such as a sapling tree or tree stump. BE CONSTANTLY ALERT FOR BLADE THRUST AND GUARD AGAINST ITS EFFECTS!

WARNING!

Blade thrust can occur without warning if the blade snags, stalls or binds

WARNING!

Blade thrust is more likely to occur in areas where it is difficult to see the material being cut.

Brushcutter Handlebar

A brushcutter handlebar or barrier bar helps prevent the operator from moving forward, or the unit moving rearward, thus preventing inadvertent bodily contact with the blade. ALWAYS KEEP THE HANDLEBAR OR BARRIER BAR SECURELY IN PLACE ON THE UNIT!

Brushcutter harness

A harness provides additional protection against blade thrust. In addition, a harness gives significant support and comfort to help ensure safe and efficient operation. When operating a unit with a blade, make sure both the handle and harness are adjusted to the size of the operator using the unit.

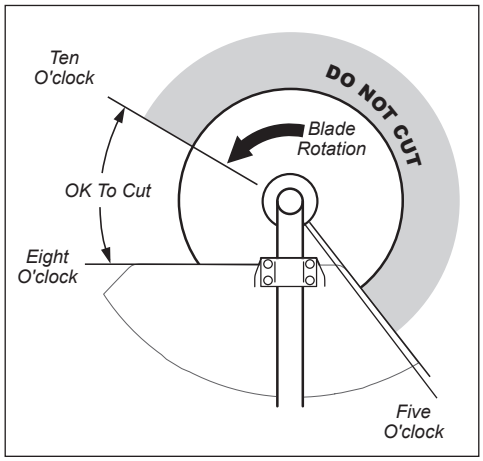
Engine Operating Speeds

Operate the unit at full throttle while cutting. Best fuel efficiency is obtained by releasing the throttle when swinging back after a cut.

- To prevent possible engine damage, do not allow the brushcutter to run at high speeds without a load.
- Avoid operating the engine at low speeds. Doing so can lead to rapid clutch wear. In addition, slow-speed operation tends to cause grass and debris to wrap around the cutting head.

Using a Blade T282X

The blade rotates counter-clockwise. For best performance and to minimize being stuck by debris, move the blade from right to left while advancing on your work. Position the blade so cuts are made between the blade's 8 o'clock and 10 o'clock positions (as viewed from above). DO NOT cut between the 10 o'clock and 5 o'clock positions.



WARNING!

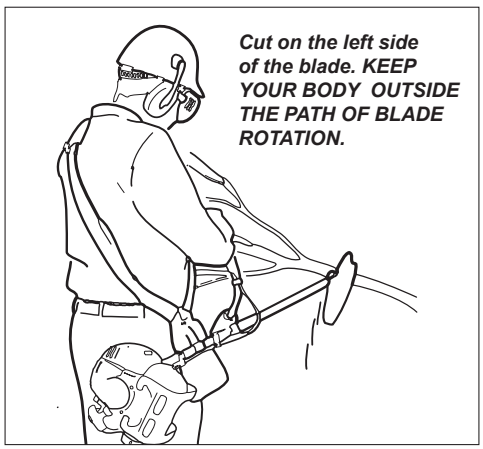
When cutting wood with a blade, feed the blade slowly—never strike or "slam" a spinning blade against the wood.

WARNING!

DO NOT use 2-tooth or non-Shindaiwa approved 4-tooth cutting blades with Shindaiwa trimmers and brushcutters.

Vertical Cuts

Hold the brushcutter with the blade at a 90° angle to the ground so the blade's bottom edge rotates toward the operator. Move the blade from top to bottom through the cut, and cut only with the bottom edge of the blade.



WARNING!

When making vertical cuts, never allow the blade to exceed waist height.

Maintenance

General maintenance

IMPORTANT!

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY A DEALER OR SERVICE CENTER AUTHORIZED BY SHINDAIWA INC. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF A WARRANTY CLAIM.

WARNING!

Non-standard accessories, cutting attachment, or replacement parts may not operate properly with your unit and may cause damage and lead to personal injury.

NOTE:

Using non-standard replacement parts could invalidate your Shindaiwa warranty.

WARNING!

Before performing any maintenance, repair, or cleaning work on the unit, make sure the engine and cutting attachment are completely stopped. Disconnect the spark plug wire before performing service or maintenance.

Muffler

This unit must never be operated with a faulty or missing spark arrester or muffler. Make sure the muffler is well secured and in good condition. A worn or damaged muffler is a fire hazard and may also cause hearing loss.

Spark Plug

Keep the spark plug and wire connections tight and clean.

Fasteners

Make sure nuts, bolts, and screws (except carburetor adjusting screws) are tight.

Blades

Keep blades sharp and check blade condition frequently. If a blade's performance changes suddenly, stop the engine and check the blade for cracks or other damage. Replace a damaged blade IMMEDIATELY!

WARNING!

- Never repair a damaged blade by welding, straightening, or by modifying its shape. An altered blade may break during operation, resulting in serious personal injury.
- DO NOT use 2-tooth or NON-Shindaiwa approved 4-tooth cutting blades on Shindaiwa trimmers or brushcutters.
- Blades are not interchangeable between Shindaiwa edgers and trimmer/brushcutter models. Operating any unit with a blade or attachment not approved for that unit can be hazardous and may cause serious injury.

Daily maintenance

Prior to each work day, perform the following:

- Remove all dirt and debris from the engine, check the cooling fins and air cleaner for clogging, and clean as necessary.
- Clean any debris or dirt from the cutting attachment.
- Check the entire unit for leaking fuel or grease.
- Check for loose or missing screws or components. Make sure the cutter attachment is securely fastened.
- Make sure nuts, bolts, and screws (except carburetor idle speed adjusting screws) are tight.
- Carefully remove any accumulations of dirt or debris from the muffler and fuel tank. Check cooling air intake area at base of crankcase. Remove all debris. Dirt build-up in these areas can lead to engine overheating, fire, or premature wear.

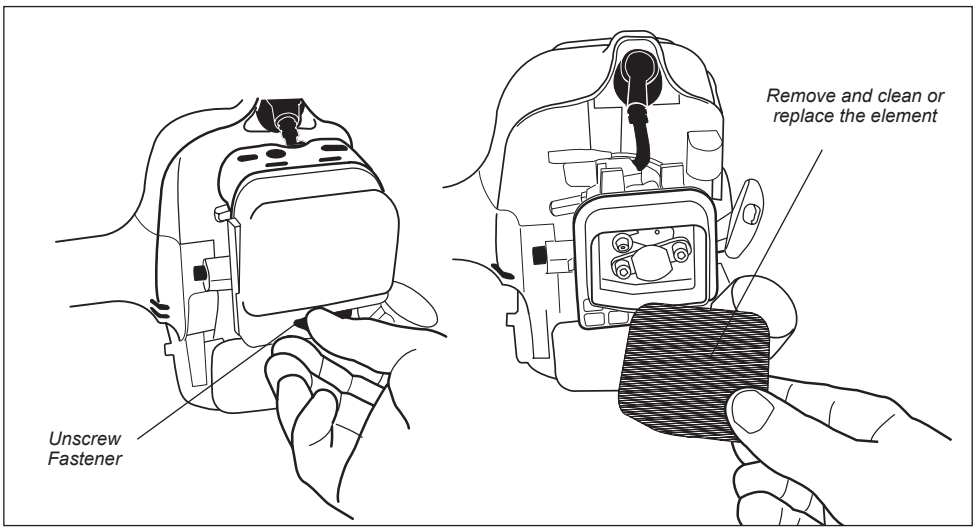
10-hour maintenance

Perform more frequently in dusty or dirty conditions.

Remove the air cleaner filter. Clean or replace as necessary. To clean filter wash it thoroughly in soap and water. Let it dry before reinstalling the filter.

CAUTION!

Do not operate the unit if the air cleaner or filter is damaged, or if the filter is wet or water soaked.



Maintenance (continued)

10/15 hour maintenance

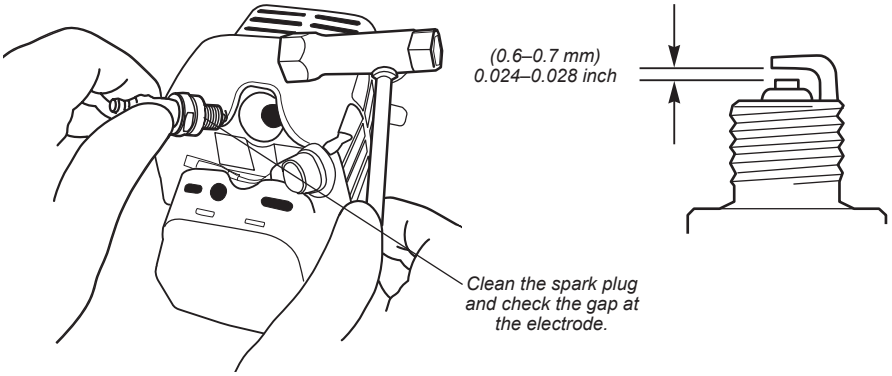
Every 10 to 15 hours of operation: Remove and clean the spark plug. Adjust the spark plug electrode gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). If the spark plug must be replaced, use only an NGK BPMR6A or equivalent resistor type spark plug of the correct heat range

CAUTION!

Before removing the spark plug, clean the area around the plug to prevent dirt and debris from getting into the engine's internal parts. .

NOTE

The NGK BPMR6A also meets the requirements for electro magnetic compliance (EMC).



50 hour maintenance

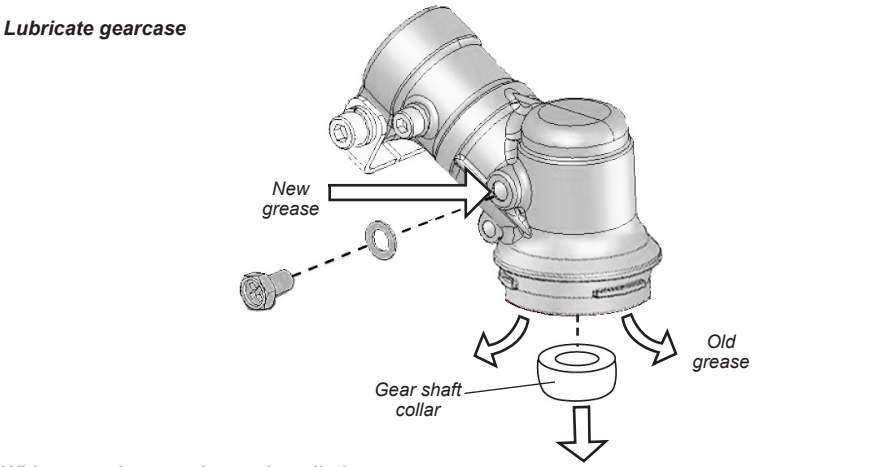
Every 50 hours of operation, lubricate gearcase (more often in dusty or dirty conditions):

Without cutting attachment installed on gear case:

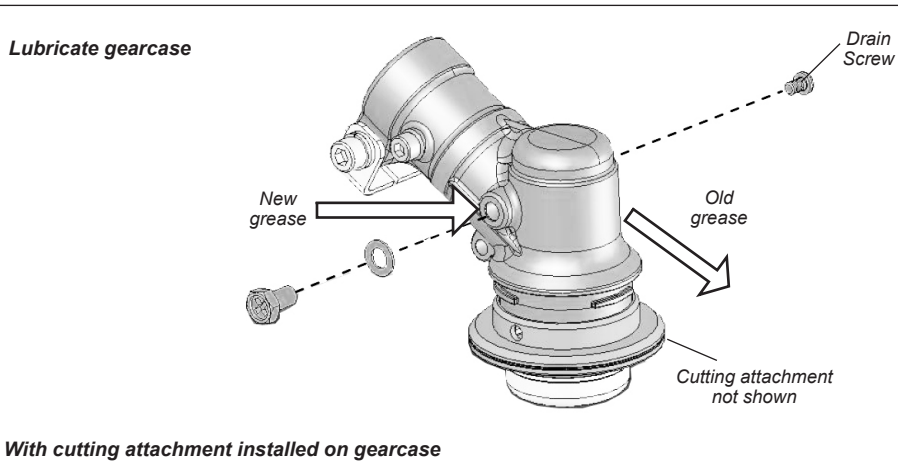
- Remove and clean the cylinder cover and clean grass and dirt from the cylinder fins.
- Remove the cutting attachment, cutting attachment holder and gear shaft collar. Remove the filler plug from the side of the gear case and press new grease into the gear case until old grease is pushed out. Use only lithium-base grease such as Shindaiwa Gear Case Lubricant or equivalent.
- Remove mainshaft and lubricate both ends of the splines.

With cutting attachment installed on gear case:

- Remove and clean the cylinder cover and clean grass and dirt from the cylinder fins.
- Remove the filler plug and drain screw from the side of the gear case and press new grease into the gear case until old grease is pushed out. Use only lithium-base grease such as Shindaiwa Gear Case Lubricant or equivalent.
- Remove mainshaft and lubricate both ends of the splines.



Without cutting attachment installed on gearcase



With cutting attachment installed on gearcase

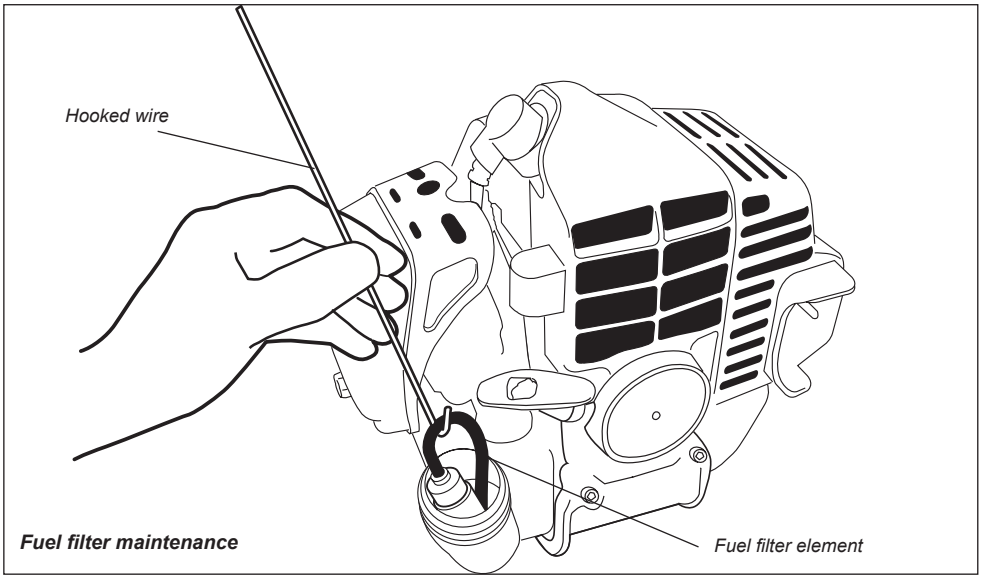
50 hour maintenance

Remove and replace the fuel filter element.

Before reinstalling the new filter element, inspect the condition of all the fuel system components (fuel pick-up line, fuel return line, tank vent line, tank vent, fuel cap and fuel tank). If damage, splitting or deterioration is noted, the unit should be removed from service until it can be inspected or repaired by a Shindaiwa-trained service technician.

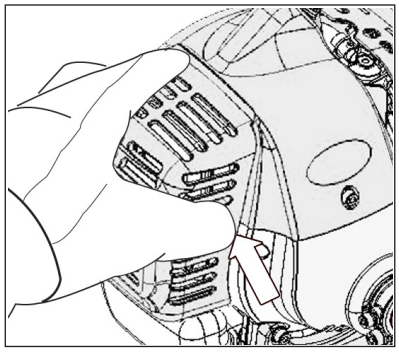
CAUTION!

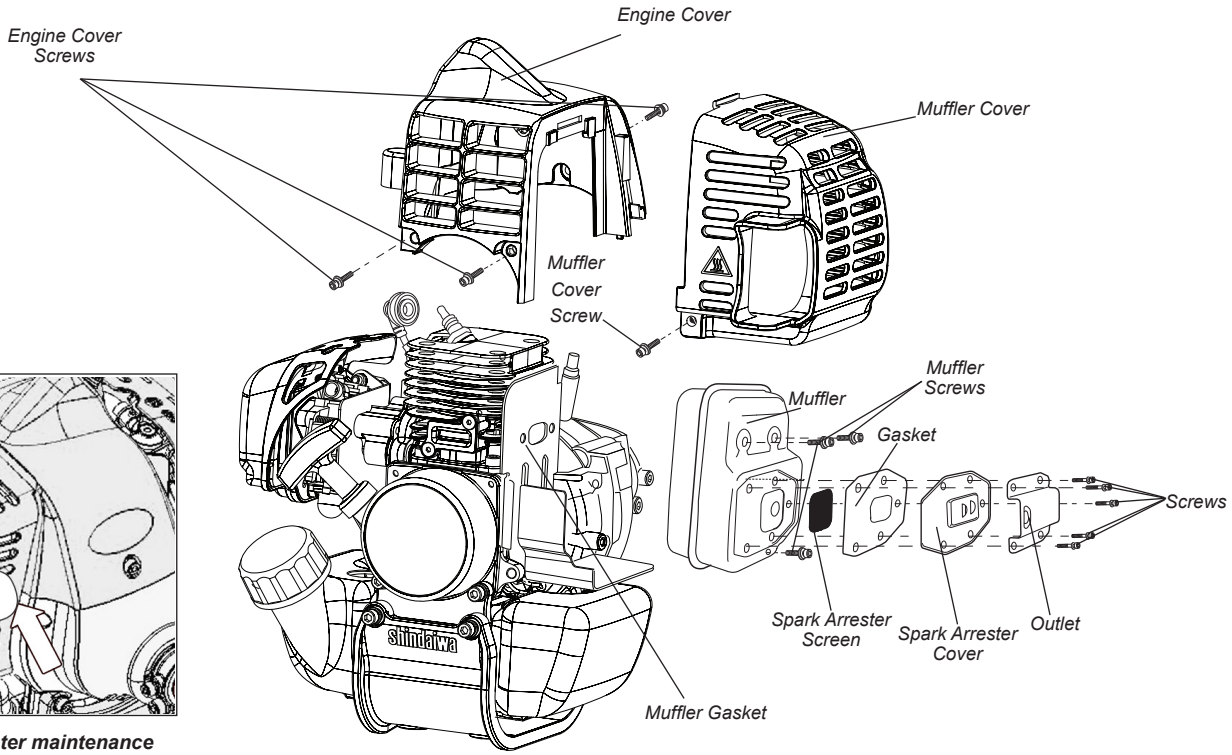
Make sure you do not pierce the fuel line with the end of the hooked wire. The line is delicate and can be damaged easily.



Fuel filter maintenance

135 hour maintenance





Muffler and spark arrester maintenance

Every 135 hours of operation, remove and clean the muffler.

WARNING!

Never operate the unit with a damage or missing muffler or spark arrester! Operating with a missing or damaged spark arrester is a fire hazard and could also damage your hearing.

If the engine becomes sluggish and low on power, check and clean the spark arrester screen.

1. Remove the spark plug boot.
2. With a 4mm hex wrench remove the 1 muffler cover and 3 engine cover screws and the engine cover. The muffler cover is attached to the engine cover at the top and front by tabs. To remove push inward at arrow area while pulling outward. See insert image.
3. With a Phillips type screwdriver remove the 5 screws holding the spark arrester screen and cover to the muffler.
4. Remove the screen and clean it with a stiff bristle brush.
5. Remove the 3 muffler bolts and the muffler.
6. Inspect the cylinder exhaust port for any carbon buildup.
7. Gently tap the muffler on a wood surface to dislodge any loose carbon.
8. Reassemble the spark arrester, muffler and engine cover in the reverse order of disassembly.

IMPORTANT!

If you note excessive carbon buildup, consult with an authorized Shindaiwa servicing dealer.

Maintenance (continued)

Blade Sharpening

When the cutting edges of the blade become dull, they can be resharpened with a few strokes of a file.

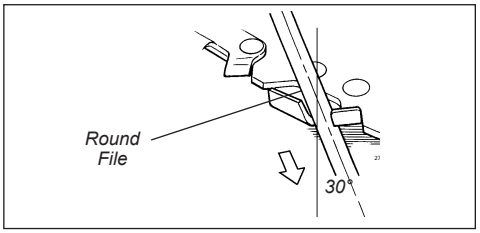
In order to keep the blade in balance, all cutting edges must be sharpened equally.

Shindaiwa Tornado™ Blade

To sharpen the cutters on a Shindaiwa Tornado™ Blade, use a 7/32-inch round file. File the leading edge of each tooth to a razor edge. The top plate of each tooth should angle back 30°.

WARNING!

Wear protective gloves when handling or performing maintenance on the blade.

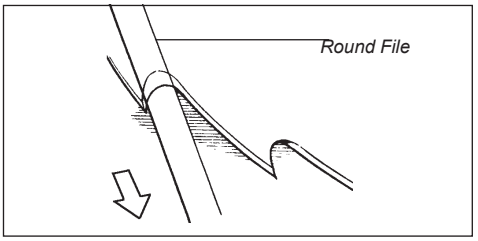


WARNING!

Sharpen only the cutting teeth of a blade. DO NOT alter the contour of the blade in any way.

Multiple-tooth Circular Blade

Use a round file to maintain a radius of 0.04 to 0.06" (1 to 1.5 mm) at the base of each tooth. Cutting edges must be offset equally on each side.



Long Term Storage

Whenever the unit will not be used for 30 days or longer, use the following procedures to prepare it for storage:

- Clean external parts thoroughly.
- Drain all the fuel from the carburetor and the fuel tank.

IMPORTANT!

All stored fuels should be stabilized with a fuel stabilizer such as STA-BIL, if shindaiwa ONE oil with fuel stabilizer is not used.

CAUTION!

Gasoline stored in the carburetor for extended periods can cause hard starting, and could also lead to increased service and maintenance costs.

- Remove remaining fuel from the fuel lines and carburetor with the fuel drained from the fuel tank. To do so:
  1. Prime the primer bulb until no more fuel is passing through.
  2. Start and run the engine until it stops running.
  3. Repeat steps 1 and 2 until the engine will no longer start.
- Remove the spark plug and pour about 1/4 ounce of 2-cycle mixing oil into the cylinder through the spark plug hole. Slowly pull the recoil starter 2 or 3 times so oil will evenly coat the interior of the engine. Reinstall the spark plug.
- Before storing the unit, repair or replace any worn or damaged parts.
- Remove the air cleaner element from the carburetor and clean it thoroughly with soap and water, let dry and reassemble the element.
- Store the unit in a clean, dust-free area.

Troubleshooting Guide

ENGINE DOES NOT START

What To Check	Possible Cause	Remedy
Does the engine crank? NO	Faulty recoil starter. Fluid in the crankcase. Internal damage.	Consult with an authorized servicing dealer.
YES → **Good compression?** NO	Loose spark plug. Excess wear on cylinder, piston, rings.	Tighten and re-test. Consult with an authorized servicing dealer.
YES → **Does the tank contain fresh fuel of the proper grade?** NO	Fuel incorrect, stale, or contaminated; mixture incorrect.	Refill with fresh, clean unleaded gasoline with a pump octane of 87 or higher mixed with a 2-cycle mixing oil that meets or exceeds ISO-L-EGD and/or JASO FD classified oils at 50:1 gasoline/oil ratio.
YES → **Is fuel visible and moving in the return line when priming?** NO	Check for clogged fuel filter and/ or vent. Primer pump functioning incorrectly.	Replace fuel filter or vent as required. Restart. Consult with an authorized servicing dealer.
YES → **Is there spark at the spark plug wire terminal?** NO	The ignition switch is in “O” (OFF) position. Shorted ignition ground. Faulty ignition unit.	Move switch to “I” (ON) position and restart. Consult with an authorized servicing dealer.
YES → **Check the spark plug.**	If the plug is wet, excess fuel may be in the cylinder. The plug is fouled or improperly gapped. The plug is damaged internally or of the wrong size.	Crank the engine with the plug removed, reinstall the plug, and restart. Clean and regap the plug to 0.6 mm - 0.7 mm. Restart. Replace the spark plug. Check the “Specifications” section for the correct plug for your unit. Restart.

Troubleshooting Guide (continued)

LOW POWER

What To Check	Possible Cause	Remedy
Is the engine overheating?	Operator is overworking the unit.	Operate at slower rate.
	Carburetor mixture is too lean.	Consult with an authorized servicing dealer.
	Improper fuel ratio.	Refill with fresh, clean unleaded gasoline with a pump octane of 87 or higher mixed with a 2-cycle mixing oil that meets or exceeds ISO-L-EGD and/ or JASO FD classified oils at 50:1 gasoline/oil ratio.
	Fan, fan cover, cylinder fins dirty or damaged	Clean, repair or replace as necessary.
	Carbon deposits on the piston or in the muffler.	Consult with an authorized servicing dealer
Engine is rough at all speeds. May also have black smoke and/or unburned fuel at the exhaust.	Clogged air cleaner element.	Clean or replace the air filter
	Loose or damaged spark plug.	Tighten or replace the spark plug. Restart. Check the Specifications page in this manual for the correct spark plug for this unit.
	Air leakage or clogged fuel line.	Repair or replace fuel filter and/or fuel line.
	Water in the fuel.	Refill with fresh fuel/oil mixture.
	Piston seizure. Faulty carburetor and/or diaphragm	Consult with an authorized servicing dealer.
Engine is knocking.	Overheating condition.	Consult with an authorized servicing dealer.
	Improper fuel.	Check fuel octane rating; check for presence of alcohol in the fuel. Refuel as necessary.
	Carbon deposits in the combustion chamber.	Consult with an authorized servicing dealer.

Troubleshooting Guide (continued)

ADDITIONAL PROBLEMS

What To Check	Possible Cause	Remedy
Poor acceleration.	Clogged air filter.	Clean or replace the air filter.
	Clogged fuel filter.	Replace the fuel filter.
	Lean fuel/air mixture.	Consult with an authorized servicing dealer.
	Idle speed set too low.	Adjust: 2,750 (±250) min^{-1}.
Engine stops abruptly.	Switch turned off.	Reset the switch and re-start.
	Fuel tank empty.	Refuel. See Fuel section of manual.
	Clogged fuel filter.	Replace fuel filter.
	Water in the fuel.	Drain; replace with clean fuel. See Fuel section of manual.
	Shorted spark plug or loose terminal.	Clean or replace spark plug. Check the Specifications page in this manual for the proper spark plug for your unit. Tighten the terminal.
	Ignition failure.	Replace the ignition unit.
	Piston seizure.	Consult with an authorized servicing dealer
Engine difficult to shut off.	Ground (stop) wire is disconnected or switch is defective	Test and replace as required.
	Overheating due to incorrect spark plug	Idle engine until cool. Replace the spark plug. Check the Specifications page in this manual for the proper spark plug for your unit.
	Overheated engine.	Idle engine until cool.
Cutting attachment moves at engine idle.	Engine idle too high.	Set idle: 2,750 (±250) min^{-1}.
	Broken clutch spring or worn clutch spring boss.	Replace spring/shoes as required.
	Loose attachment holder.	Inspect and re-tighten holders securely.
Attachment will not move.	Shaft not installed in powerhead or gearcase.	Inspect and reinstall as required.
	Broken shaft.	Consult with a authorized servicing dealer.
	Damaged gearcase.	
Excessive vibration.	Warped or damaged attachment.	Inspect and replace attachment as required.
	Loose gearcase.	Tighten gearcase securely.
	Bent main shaft/worn or damaged bushings.	Inspect and replace as necessary.
Engine will not idle down.	Engine idle is set too high.	Set idle: 2,750 (±250) min^{-1}.
	Engine has air leak.	Consult with a authorized servicing dealer.

Emission System Warranty Statement

Your Warranty Rights and Obligations

The California Air Resources Board, the U.S. Environmental Protection Agency and Shindaiwa Corporation are pleased to explain the exhaust and evaporative emission control system warranty on your new small off-road (non-road) engine.

In California, new small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. In other states, new 1997 and later non-road engines must meet the Federal EPA's stringent anti-smog standards.

Shindaiwa Corporation must warrant the emission control system on your small off-road engine for the periods of time listed below, provided there has been no abuse, neglect, or improper maintenance of your small off-road engine.

Your engine exhaust and evaporative emission control system includes parts such as the carburetor, fuel tank, the ignition system and, if equipped, the catalytic converter. These components are specifically listed below.

Where a warrantable condition exists, Shindaiwa Corporation will repair your small off-road engine at no cost to you including diagnosis, parts, and labor.

Manufacturer's Warranty Coverage

When sold within the U.S., this engine's emission control system is warranted for a period of two (2) years from the date this product is first delivered to the original retail purchaser.

During the warranty period, Shindaiwa Corporation will, at their option, repair or replace any defective emission-related component on this engine. During the original Warranty Period, these Warranty Rights are automatically transferable to subsequent owners of this product.

What is Covered by this Warranty

1. Carburetor Internal Components
   - Throttle Valve, Needle, Jet, Metering Diaphragm
2. Fuel Tank
3. Ignition System Components
   - Ignition Coil
   - Flywheel Rotor
4. Catalytic Converter (if originally equipped)

The emission control system for your particular Shindaiwa Corporation engine may also include certain related hoses and connectors.

Owners Warranty Responsibilities

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in this owners manual. Shindaiwa Corporation recommends that you retain all receipts covering maintenance on your small off-road engine, but Shindaiwa Corporation cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should be aware, however, that Shindaiwa Corporation may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your small off-road engine to an authorized Shindaiwa Corporation Dealer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact a Shindaiwa Corporation customer service representative or your local Shindaiwa Dealer.

Consequential Damages

In the event that other component parts of this product are damaged by the failure of a warranted part, Shindaiwa Corporation will repair or replace such component parts at no charge to you.

What is Not Covered

- Failures caused by abuse, neglect, or improper maintenance procedures.
- Failures caused by the use of modified or non-approved parts or attachments.

This Warranty is Administered by:

Shindaiwa Corporation
11975 SW Herman Road
Tualatin, OR 97062
(503) 692-3070

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shindaiwa®

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